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A NEW SPECIES OF *ALEUROTULUS* (HOMOPTERA: ALEYRODIDAE)

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Abstract.—The pupal cases and third instar of ***Aleurotulus anthuricola***, new species, are described. This whitefly is apparently host-specific to *Anthurium* spp. and is endemic to Colombia and several islands in the Lesser Antilles. It was detected in Hawaii in 1978.

Key Words: *Aleurotulus, anthuricola*, Aleyrodidae, whitefly, *Anthurium* spp., Hawaii

Aleurotulus anthuricola, new species, is apparently host-specific on *Anthurium* spp. (Araceae) and endemic to Colombia and several islands in the Lesser Antilles. In 1978 it was discovered in Hawaii on the inner surface of leaf sheaths of anthurium plants. Injury was not observed on infested plants and therefore, *anthuricola* was of minor concern to the anthurium flower industry in Hawaii. In recent years however, infestations were found on the flower spathes and although the damage is negligible, *anthuricola* has become a major pest because of problems with agricultural quarantine regulations. Infested flowers, unless treated, cannot be exported from Hawaii to the continental United States and other uninfested areas of the world. A description is presented here to provide a scientific name for biological and control studies now in progress in Hawaii.

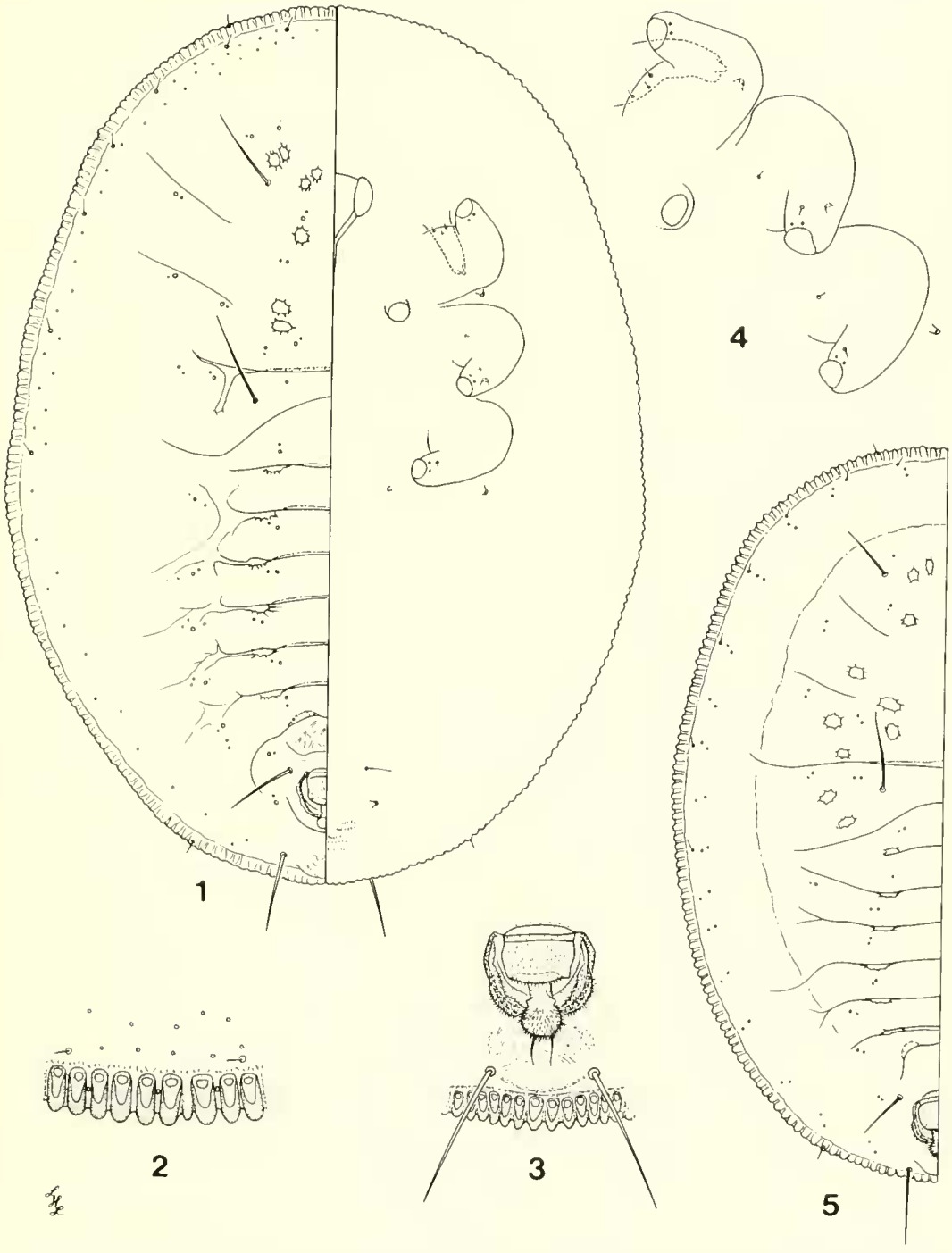
Measurements are based on 10 specimens. The values are given first for the holotype followed by those for the paratypes in parentheses. The terms pupae and pupal cases are used interchangeably in this paper.

Aleurotulus anthuricola Nakahara, NEW SPECIES
Figs. 1–7

Pupae and third instar larvae grayish black; margins pale; with fringe of white, filamentous wax. Often clustered in a mass of white, filamentous wax on inner surface of leaf sheaths and flower spathes and on leaf petioles. Severe infestions also on outer surface of sheaths and on flower spathes (Figs. 6–7).

Pupa (Fig. 1): Pupal cases broadly oval. Measurements of slide mounted specimens: Length 880 (623–955) μm, width 636 (438–677) μm.

Margin and submargin (Fig. 2): Margin dentate, 13 (13–16) teeth per 100 μm on lateral margin. Teeth of two types: those with elongate, triangular areas at bases; smaller ones without triangular areas. Tracheal pore area undifferentiated. Anterior marginal setae 15 (12–20) μm long, 14 (6–18) teeth from midline; posterior marginal setae 24 (17–30) μm long, 34 (34–45) teeth between setae. Submargin not differentiated



Figs. 1–5. Fig. 1. Pupa habitus (148×). Fig. 2. Marginal and submarginal areas (390×). Fig. 3. Vasiform orifice and dorsal caudal area of pupal case (308×). Fig. 4. Thoracic legs and antennae (230×). Fig. 5. Third instar larva habitus (202×).

Figs. 6–7. Fig. 6. Typical infestation in leaf sheath of anthurium. Fig. 7. Severe infestation on the petioles of anthurium.

from dorsal disc by fold or furrow; with short, transverse ridges; each ridge with elongate triangular area extending into marginal tooth; proximal part of area with an oval, pale spot. Micropore between ridges, in irregular spaced row around case. Submarginal setae 12–20 μm long; 6 pairs on cephalothorax, 1 pair on anterior abdominal segment. Small disc pores about 1 μm in diameter mesad of ridges and submarginal setae. Oval, transverse tuberele between caudal setae.

Dorsal disc: Derm smooth. Eyespots absent. Longitudinal molting suture extending to anterior margin; transverse molting suture extending caudolaterally and anteriorly into subdorsum, lateral ends not attaining level of its midpoint; sutures smooth; other cephalothoracic segmental division obscure. Submedial furrow on metathorax extending obliquely from suture. Cephalic setae 74 (49–84) μm long; metathoracic setae 62–99 μm long, in posterior ½ of segment; eighth abdominal setae 64 (44–67) μm long, laterad of anterior margin of vasiform orifice. Caudal setae on distal part of submargin just mesad of submarginal ridges, 77 (49–77) μm long, extending beyond posterior margin, separated by 1.2–1.6 times width of vasiform orifice; transverse tuberele between setae. Shallow, oval, submedial depressions on head, prothorax, mesothorax and 1 pair each on abdominal segments II–VIII. Medial area of abdomen slightly elevated; rachis slightly developed; medial part of segment VII about ½–¾ times as long as VI; segment VIII with medial tuberculate area between small pockets. Vasiform orifice (Fig. 3) subquadrate, 44 (35–42) μm long, 47 (44–47) μm wide, 1.5–2.5 times its length from posterior margin; rim thin, often covered by spinulose membranous inner wall

that may extrude over rim; bottom of orifice open in anterior ⅔. Operculum irregularly transverse, caudal part membranous and spinulose, caudal margin rather straight or irregular; 24 (20–24) μm long, 37 (32–40) μm wide, occupying ½–⅗ length of vasiform orifice. Lingula spinulose; apical knob oval, with 2 setae, exposed, included or protruding posteriorly beyond orifice. Disc pores about 2 μm in diameter and smaller associated porettes distributed as follows: head with 1 submedial, 3 subdorsal pairs; prothorax with 1 submedial, 2 subdorsal pairs; mesothorax with 1 submedial, 2 subdorsal pairs; and metathorax with 1 submedial, 2 subdorsal pairs; abdominal segment I with 1 submedial pair, II with 0–1 submedial pair, III with 1 submedial and 1–2 subdorsal pairs, segments IV–VIII each with 1 submedial and 1 subdorsal pair.

Venter. Derm membranous, without distinct sculpture. Thoracic tracheal fold obscure, abdominal tracheal fold with spinules. Antenna (Fig. 4) not reaching anterior thoracic spiracle, apex with a small, conical point. Legs each with 2 distal setal bases and 4 basal setae, mesothoracic and metathoracic legs each with 1 distal seta. Eighth abdominal setae 22 (22–35) μm long, anterior of posterior abdominal spiracle.

Third instar larva (Fig. 5): Similar in shape and morphological characters as pupal cases. Length 537–562 μm, width 394–418 μm.

Margin and submargin: Margin broadly crenulate, 12–16 crenulae per 100 μm on lateral margin. Anterior marginal setae 10–12 μm long, separated by 12–17 crenulae; posterior marginal setae 12–24 long, separated by 19–28 crenulae. Submargin similar to pupal cases. Submarginal setae 7–10 μm long, 6 pairs on cephalothorax, 1 pair on anterior abdominal segment. Row of small disc pores mesad of setae.

Dorsal disc: Cephalic setae 24–53 μm long, metathoracic setae 49–67 μm long, eighth abdominal setae 37–42 μm long; caudal setae 54–67 μm long. Vasiform orifice 27–32 μm long, 35–37 μm wide, anterior of posterior margin by about its length. Operculum 17–20 μm long, 27–35 μm wide. Disc pores and associated porettes distributed as follows: cephalic segment with 1 submedial pair; prothorax with 0–1 subdorsal pair; mesothorax and metathorax each with 2 subdorsal pairs; abdominal segment I with 1 submedial pair; segments III–V with 0–1 submedial pairs; segments III and VI–VIII each with 1 subdorsal pair; occasionally present on segment IV.

Type material: Holotype pupal case, 11 pupal cases and 2 third instar larvae paratypes on slide labeled: Colombia, *Anthurium* sp., 31-VII-78, F. D. Matthews at Miami (78-7710). Other Paratypes: 6 pupal cases with same data as holotype slide. COLOMBIA: 7 pupal cases, *Anthurium* sp., 22-II-72, J. C. Buff, at Miami (72-5009); 5 pupal cases, *Anthurium* sp., 13-VII-73, E. B. Lee, at Miami (73-13786); 9 pupal cases, *Anthurium* sp., 20-III-79, G. Stone, at Miami (79-2655); 5 pupal cases, 5 third instar larvae, Anthurium, 13-XII-76, Froster, at Miami (77-967); 10 pupal cases (2 slides), *Anthurium* sp., 28-III-84, J. Russo, at Miami (84-3835); Bitaco, 3 pupal cases, *Anthurium* sp., 23-VII-58, F. T. Kenworthy (58-13126); Sasaima, 6 pupal cases, 10-VIII-72, F. Mosquiera Paris (72-18229). BARBADOS: 12 pupal cases, *Anthurium* sp., 8-II-80, L. Schroeder, at JFKIA (JFKIA 32840). DOMINICA: 7 pupal cases, *Anthurium* sp., 19-VI-81, E. B. Lee, at Miami (Miami 28783). GUADELOUPE: Duclos, 4 pupal cases, *Anthurium palmarum*, 20-III-87, J. Etienne (GR627). HAWAII: Aiea (Oahu), 23 third instar larvae (2 slides), *Anthurium* sp., 29-VIII-78, M. Rabago (78-8071); 6 pupal cases, 2 third instar larvae, 5-IX-78, L. Nakahara. MARTINIQUE: 11 pupal cases (2 slides), Anthurium, 8-III-71, J. C. Buff, at Miami (71-15065); 8 pupal cases (2 slides), *Anthurium andreanum*, 13-VII-78, R. Silvestre de Sacy; Morne-Rouge, 6 pupal cases, *Anthurium andreanum*, 16-V-81, L. Paley; St. Joseph, 26 pupal cases (5 slides), *Anthurium andreanum*, 16-VI-81, L. Paley;

TRINIDAD: 9 pupal cases, *Anthurium* sp., 10-IV-78, E. B. Lee, at Miami (Miami 17802). Holotype and paratypes in the aleyrodid collection of the U.S. National Museum of Natural History located at Beltsville, Maryland. Depositories of other paratypes: British Museum (Natural History), London; California Dept. of Food and Agriculture, Sacramento; Florida State Collection of Arthropods, Gainesville; and Hawaii Dept. of Agriculture, Honolulu.

Etymology: The specific epithet is a combination of the host plant, *Anthurium*, and latin "cola" which means inhabitant. This species is known only from *Anthurium*.

Comments: Of the four species currently assigned to the genus *Aleurotulus*, only the type-species, *nephrolepidis* (Quaintance 1900), which infests ferns in greenhouses in several countries, is well documented. The other three species (*arundinacea* Singh 1931, *maculata* Singh 1931, and *mundururu* Bondar 1923) are known only from their original collections. *Aleurotulus anthuricola* has well developed cephalic, metathoracic and eighth abdominal setae, and grayish black pupal cases; the corresponding setae of *nephrolepidis* are short and indistinct and the pupal cases are pale.

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